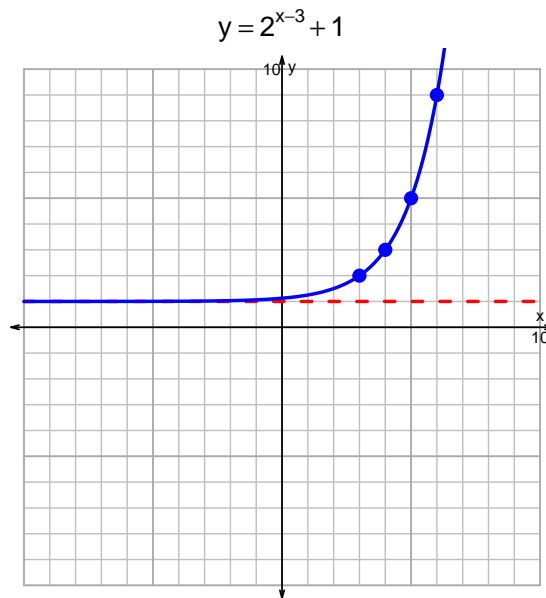
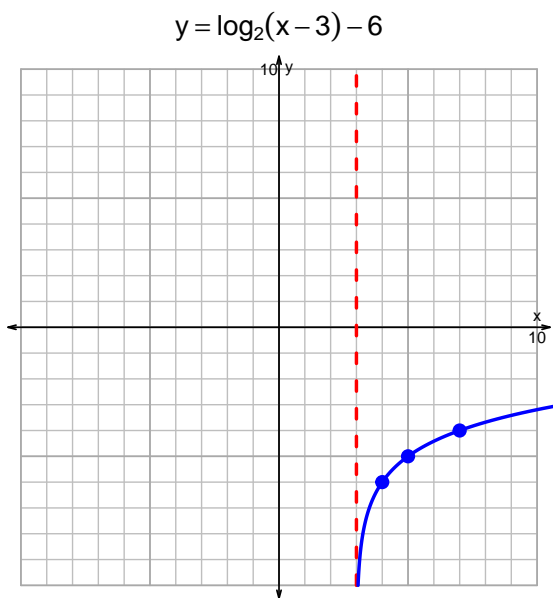


Name: _____

Date: _____

s18: EXP LOG (SLTN v348)

1. (10 pts) Graph $y = \log_2(x - 3) - 6$ and $y = 2^{x-3} + 1$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$-23 = \left(\frac{-3}{7}\right) \cdot 10^{-5t/4}$$

Divide both sides by $\frac{-3}{7}$.

$$\frac{23 \cdot 7}{3} = 10^{-5t/4}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{23 \cdot 7}{3} \right) = \frac{-5t}{4}$$

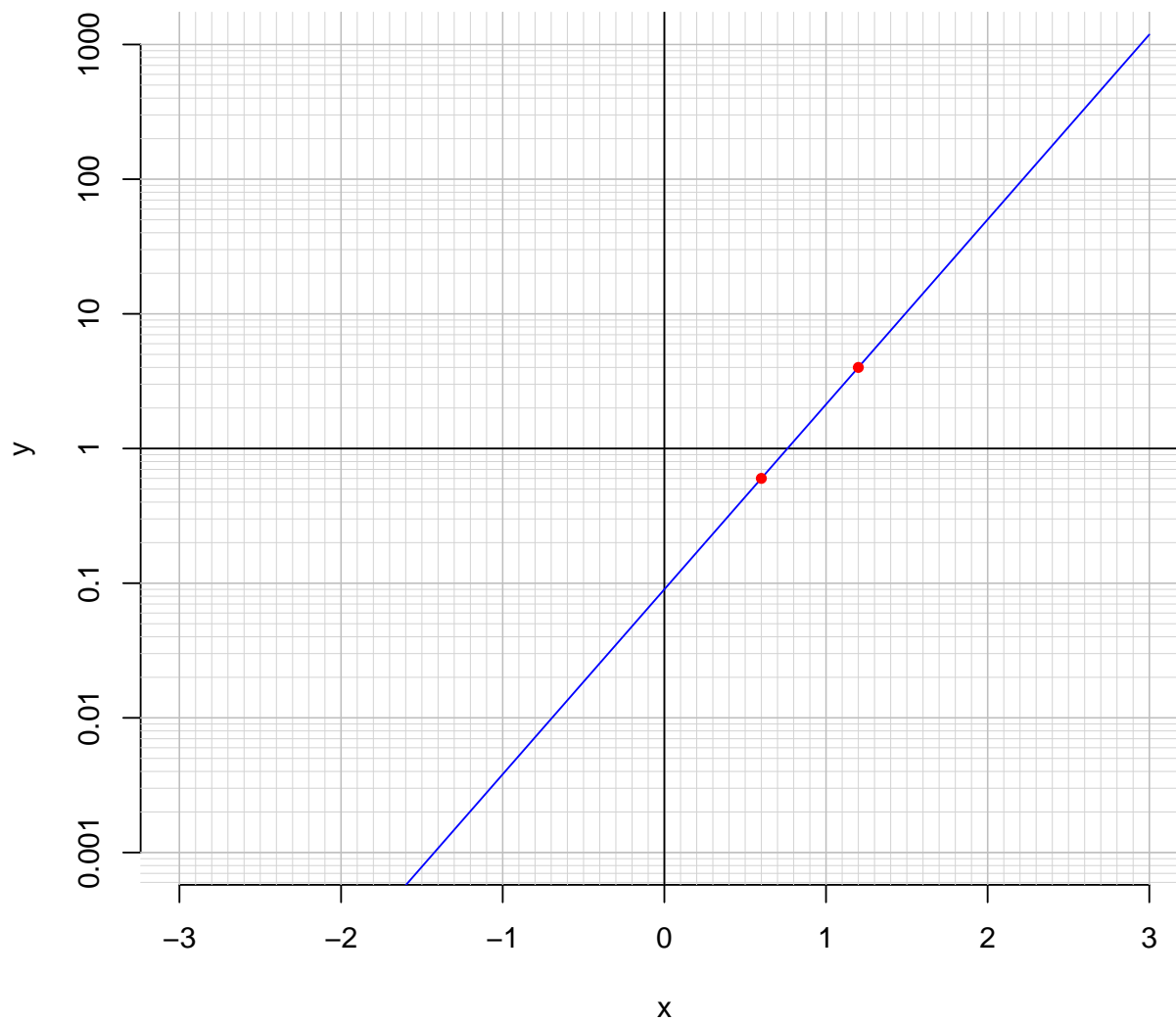
Divide both sides by $\frac{-5}{4}$.

$$\frac{-4}{5} \cdot \log_{10} \left(\frac{23 \cdot 7}{3} \right) = t$$

Switch sides.

$$t = \frac{-4}{5} \cdot \log_{10} \left(\frac{23 \cdot 7}{3} \right)$$

3. (10 pts) An exponential function $f(x) = 0.09 \cdot e^{3.16x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(1.2)$.

$$f(1.2) = 4$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{3.16} \cdot \ln\left(\frac{x}{0.09}\right)$$

Using the plot above, evaluate $f^{-1}(0.6)$.

$$f^{-1}(0.6) = 0.6$$